

FOLIO

UNIVERSITY OF ALBERTA
3 MARCH 1995



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En route to a customer-focused university

Agriculture, Food and Nutritional Science leads the way

By Judy Goldsand

It's coming! - an entire course that may be accessed by anyone with a connection to Internet, at any time of day or night, from anywhere in the world!

John Kennelly offered AnSci 472 (Applied Dairy Science) via Internet in September 1994 on an experimental basis. During the past year he has been developing nine modules for the computer course, inviting students to sample them, and revising the materials to be user-friendly.

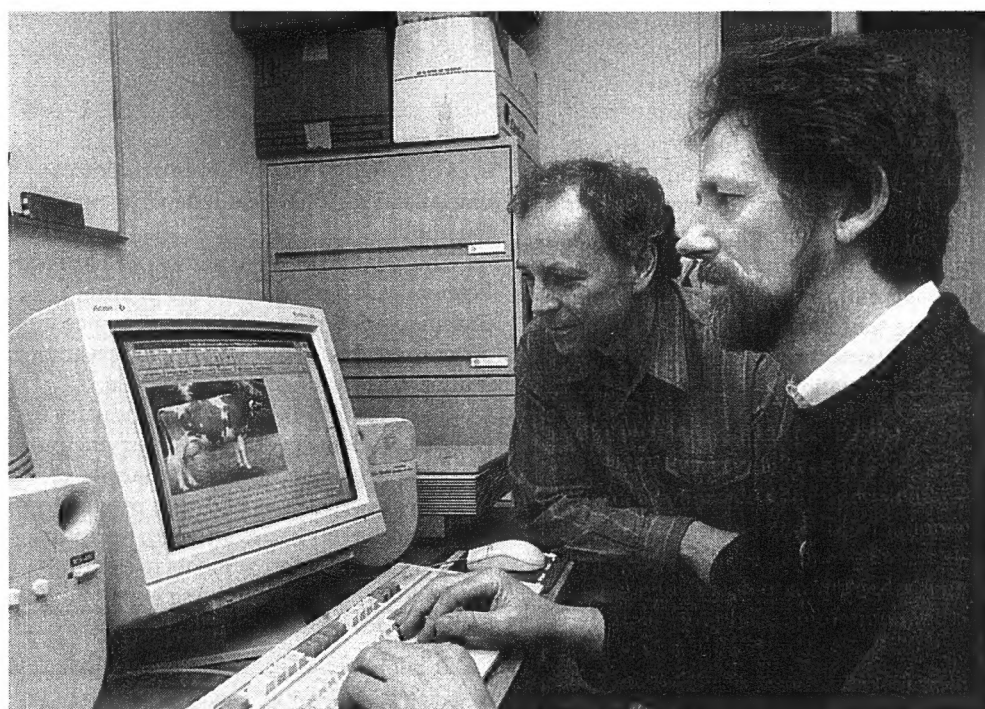
The text is easy to read and has colour photos scanned in. By a simple point and click, additional reference material may be obtained in a matter of seconds. (Much faster than going to a library, and no bus fares or parking charges.)

"People in agricultural disciplines have a tradition of extending knowledge to practitioners in the field," says Dr Kennelly. "I developed the course because I believe there is an audience that wishes to access specific packages of knowledge, often from remote sites, at their own pace and at their own convenience."

While theoretically it will be possible for a student to study the entire course without ever attending a class, currently the computer modules are used to supplement classroom teaching. This learning model has the potential to change university instruction enormously. For example, since students would already have the course materials presented via computer, formal classroom time might be scheduled a few times a month and focus on discussion and understanding of concepts.

The broader implications of course delivery over Internet are vast. Modules of courses might be initiated from authors located around the world. Students could reside anywhere there is access to the software. If course materials can be updated instantly and constantly, many costs associated with textbook revisions could be eliminated.

"We still have to figure out a few things, such as the best method for students to register for the course, and how to validate who does the exam," says Dr Kennelly.



John Kennelly, foreground, and Jerry Leonard study a cow's stomach in the module on The Ruminant Digestive System, part of the AnSci 472 course on Internet.

"E-mail may be used for registration and for communication with the instructor. Possibly a written exam on the Internet could be combined with an oral exam." Course fees also have to be determined.

Dr Kennelly says he doesn't know what the demand for the course will be in the fall, but he plans to reach a wider audience by offering the modules in different combinations, which could receive one, two or three credits.

Dr Jerry Leonard, who chairs the department's Teaching, Learning and Curriculum Committee, predicts that customer service will be the key to success in educational delivery as it is in other community services. "With increasing competition, our University will have to become more committed to using technology to better meet learners' needs."

The Internet address for the course is: <http://bull.ansci.ualberta.ca:70/0/dairy/dp472int.html>

Dr Kennelly would be happy to hear from anyone who has questions or suggestions.

WWW (World Wide Web)

The World Wide Web is a set of Internet-connected computers that allow public access to the information they carry. Besides ordinary text, it allows the inclusion of multimedia type materials - graphics, animations and sounds.

Mosaic

Mosaic is probably the most well-known software that is used to access the WWW. There are versions of Mosaic for all popular makes of computers.

Hypertext

The magic behind WWW is hypertext. Documents may be retrieved from anywhere in the WWW by a simple point and click. Hypertext also contains embedded links to other hypertext documents. By clicking on a link (usually blue coloured text), a new document is loaded and viewed.

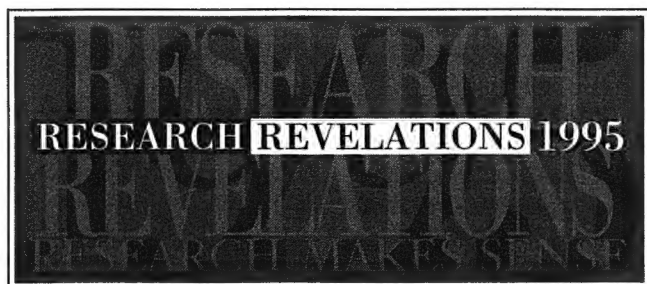
Research Revelations takes place tomorrow

By Ron Thomas

Research Revelations '95 is an interdisciplinary research exposition that doesn't stand on ceremony. Held on a Saturday (tomorrow, from 10 am to 5 pm, to be precise), the atmosphere is akin to that of an old-time general store complete with cracker-barrel. Researchers—veterans and newcomers alike—gather, display their work, talk about it, and find out what other researchers are doing.

Collaborative, interdisciplinary research projects can and do result.

Members of the University community are invited to come to the second floor of



the Heritage Medical Research Building, avail themselves of the 180 displays and speak with the people who put them together. Coffee, juice and snacks will be available, and the nearby food outlet, Vital Signs, will be open.

Research Revelations '95 is sponsored by the Office of the Vice-President (Research).

President appoints working group on oral health sciences

By Tony Myers

Rod Fraser, President of the University of Alberta, has announced the chair and the names of the eight members appointed to the working group on oral health sciences.

The Board of Governors established a working group on the integration of oral health sciences within a restructured Faculty of Medicine at its 13 January meeting.

The Chair of the working group is Roger Smith, Acting Vice-President (Academic). Dr Smith says the group has been asked to "develop a proposal for the integration and development of oral health science education within a new academic unit in a restructured Faculty of Medicine."

The members of the working group are:

- Chris Cheeseman, Medicine

- Peter Crockford, Medicine
- Ken Hinkelman, Dentistry
- Tim McGaw, Dentistry
- Janice Pimlott, Dental Hygiene
- Wayne Raborn, Dentistry
- Paul Scott, Dentistry
- Lorne Tyrrell, Medicine

Secretary to the working group is Elizabeth Clark, executive assistant to the Vice-President (Academic). In addition, the Alberta Dental Association has been invited to participate in all full meetings of the working group.

President Fraser has indicated that a report on the integration is to be ready for consideration by the Academic Development Committee on 1 May.

Canada's first Institute of Pharmaco-Economics launched

Piper chairs steering committee bringing Institute to fruition

By Sandra Halme

An Edmonton-based institute that will continue expansion of Alberta's pharmaceutical research base will be operational by September 1995.

The Institute of Pharmaco-Economics involves the Universities of Alberta and Calgary, the Governments of Alberta and Canada, the Alberta Heritage Foundation for Medical Research, and six major pharmaceutical companies in an innovative, multimillion dollar not-for-profit research consortium. The Institute of Pharmaco-Economics is the first such research consortium in Canada.

The six pharmaceutical partners are: Ciba Geigy Canada; Eli Lilly Canada; Glaxo Canada; Hoffman LaRoche; Miles Canada; and SmithKline Beecham Pharma. Funding over the next three years is expected to be \$5 million, half of which will be contributed by industry.

Martha Piper, Vice-President (Research), chairs the steering committee which developed the proposal presented to industry officials. Dr Piper points to the signing of international and national partners as a display of the high degree of confidence in the Institute. "I have no doubt," she adds, "that the Institute's work will have long-term benefits for the public and the participants through, among other things, examination of cost benefits and cost effectiveness of new drugs."



Shirely McClellan, Alberta Minister of Health, second from left, was a guest of the University at a reception held to celebrate the creation of the Institute of Pharmaco-Economics. Cooper Langford, Vice-President (Research), The University of Calgary, shares his thoughts on the newly created Institute with Minister McClellan, President Rod Fraser and Vice-President (Research) Martha Piper.

Pharmaco-economics evaluates the costs and benefits of drug therapy through the eyes of patients, health care providers, provincial and regional health departments and the public.

The creation of the Institute of Pharmaco-Economics is part of a strategy to attract pharmaceutical research to the province in order to establish strong partnerships among industry, government and academia.

The Institute will work with industry to conduct work in several areas: carrying out cost-effective and cost-benefit analyses of new drugs and classes of drugs; producing policy studies on issues affecting the industry; developing improvements to existing methodologies; and providing expert advice on pharmaco-economics.

Similarly, the Institute of Pharmaco-Economics will be essential in helping provincial governments make better decisions about the economics of drug benefits. Increasing costs are causing all provincial governments and drug insurance programs to evaluate the economic impact of drugs and drug products more closely. The Institute will help in striking a balance between therapeutic advantage and economic benefit when defining coverage under provincial government drug programs.

The Institute will be based off campus in Edmonton and will operate at arm's length from the University and industry, similar to the successful TRLabs business model. It is anticipated that more partners will join the Institute in the near future.

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Public Affairs produces Folio on a regular basis for employees and volunteers at the University of Alberta.

Folio's mandate is to serve as a credible news source for internal audiences by communicating accurate and timely information about issues, programs, people and events.

DEADLINES:

Notice of coming events: 9 am three weeks in advance of event. Classified advertisements: 3 pm one week before desired publication date. This date also serves as the deadline for cancellation of advertisements. Advertisements cost 40 cents per word with no discount for subsequent insertions. There is a limit of 40 words and a minimum charge of \$2.00. Advertisements cannot be accepted over the telephone. All advertisements must be paid for in full at the time of their submission.

Display advertisements: 3 pm Friday, seven days before desired publication date. Camera-ready artwork is required to size, complete with halftones if necessary. Call 492-0436 for sizes, rates and other particulars.

The editor reserves the right to limit, select, edit and position submitted copy and advertisements. Views expressed in Folio do not necessarily reflect University policy. Folio contents may be reprinted with acknowledgment.

ISSN 0015-5764 Copyright 1995

University signs copyright agreement

Pact with Cancopy covers much of world's printed materials

By Michael Robb

A recent agreement between the University of Alberta and Cancopy, the Canadian Copyright Licensing Agency, will ease professors' worries about copying print materials.

The new agreement should also save a number of departments a lot of time. Those units that used to have to seek publishers' permission to photocopy various print materials will no longer have to, says Chief Librarian Ernie Ingles.

The new agreement covers a great deal of the world's printed materials, although it doesn't allow people to photocopy materials with impunity, Ingles says, pointing out that some materials are excluded from the agreement.

A model agreement has been developed by Cancopy and the Association of Universities and Colleges of Canada. Minor changes have been made to that agreement to conform with each jurisdiction's requirements. But basically, the agreement is virtually identical at universities across the country. (Cancopy is a reproduction rights organization established by copyright owners to administer reprographic rights in their published works.)

The U of A pays Cancopy \$2.50 for every full-time equivalent student minus the distance education FTE for each year. There are other charges. For example, Cancopy will charge the University 50 cents for each distance education FTE each year,

50 cents for each slide made by photography which permits image projections, \$1 for the first alternate format copy of any published work and 10 cents for each subsequent alternate format copy.

The University was paying for some of these rights before the agreement was signed, says Ingles. Now the University picks up the costs and saves the departments time—although there will still be some record keeping associated with the agreement. Quality Color Press is also bound by the agreement.

The agreement also includes other conditions on just how much of a publication can be copied. It allows the University to make a sufficient number of copies to provide one for each student, two for each professor and "such numbers required by the institution for administrative purposes."

The agreement, which does not deal with nonprint material copying, is long and detailed. Ingles gives groups on campus seminars on the details of the agreement. And the Library has produced a simple guide entitled "Copying right" for the new agreement.

Print collectives such as Cancopy have been operating in other countries for some time now, says Ingles. Canada has been slow to develop a similar organization. Publishers have long argued that they were losing money as a result of unrestricted photocopying of their works.

RETIREMENT PLANNING SEMINARS FOR ACADEMIC STAFF – APRIL 1995

The Office of the Vice-President (Academic) and the Association of Academic Staff of the University of Alberta (AASUA) invite members of the AASUA and their spouses to attend a two-day retirement planning seminar. Each of the two seminars will address keys to successful planning, financial planning and lifestyle considerations.

SEMINAR 1: 12 - 13 April
8:30 am - 4:30 pm

SEMINAR 2: 25 - 26 April
8:30 am - 4:30 pm

The seminars will be held in the Stollery Centre, 5th floor, Business Building. There is no charge; coffee and lunches will be provided. Enrollment is limited and will be on a first-come, first-served basis. If you are interested in attending, please call **Lori Callahan at 492-5321**. Deadline for registration is 17 March 1995.

CURRENTS

Standard First Aid/Heartsaver courses

The Division of Occupational Health and Safety has again arranged for Standard First Aid/Heartsaver courses to be held on campus. The program consists of two full-day sessions (8 am to 4 pm) with lunch and coffee breaks. Cost: \$75 per person. The first course will be held in late April and the last at the end of September. As the courses are limited to 25 participants, registration is on a first-come, first-served basis. For further information and registration forms, call 492-5378.

Thesis help

"Revising and Editing Your Thesis." Five two-hour classes. Thursdays, 2-30 March, 6:30-8:30 pm. For more information or to register, stop by the Academic Support Centre, Effective Writing Resources, 102 Athabasca Hall, or call 492-2682.

CaPS sponsors series of forums

Career and Placement Services (CaPS) has scheduled the following forums: International Opportunities, 7 March, 5:30-9 pm, 1-5 Business Building; Arts and Entertainment, 8 March, 7-9:30 pm, L-2 Humanities Centre; Starting Your Own Business, 9 March, 6-9 pm, 2-9 Business Building. Tickets for all forums are available at CaPS, 4th floor SUB. Any remaining tickets will be sold at the door.

In cooperation with the Aboriginal Students' Association, CaPS will present a pair of events on 15 March. Aboriginal Career Fair (Dinwoodie Lounge, SUB, 1-5 pm) is an opportunity for native students to meet employers. The Career Fair will be followed by an Aboriginal Career Forum at which speakers from the native community will talk about their careers. 214 SUB, 6:30-9. On the 16th (6-9 pm, 269 CAB) is Career Forum for Students with Disabilities. Tickets are available at CaPS, Office of Services for Students with Disabilities, NAIT and Grant MacEwan.



University
of
Alberta

U of A Press book recognized

By Folio staff

A University of Alberta Press book has won an award in the 1995 American Association of University Presses Book, Jacket and Journal competition.

Max Reger's Music for Solo Piano was one of 32 typographic books selected from 266 entries in the show. It was published in September 1994. Helmut Brauss, Professor in the Department of Music, wrote the book, and U of A press designer Kerry Watt designed the book.

The annual competition serves a dual purpose: to honour and instruct. The show, held in New York in January, recognizes meritorious achievement in the design, production and manufacture of books, jackets and journals by the 114 members of the AAUP.

Lynch earns national recognition

By Folio staff

The Canadian Society for Chemical Engineering has recently awarded the Acting Dean of Engineering, David Lynch, The Albright and Wilson Americas Award. The award is presented annually to a resident of Canada who has made a distinguished contribution in chemical engineering before the age of 40.

Dr Lynch joined the Department of Chemical Engineering in 1981. He was named a McCalla Research Professor in 1990-91, and has twice received the Faculty's teaching award. He is also a recipient (1993) of the Rutherford Award for Excellence in Undergraduate Teaching. His research interests focus on chemical reaction engineering and catalysis.

The TROLS-Royce of boreal forest projects

Five-year study receives \$1.1M grant from NSERC

By Kelly Field

Many eyes are on the boreal forest of Canada, one of the last continuous forests in the world. There is increasing pressure from industry and government to use these forests, and equal pressure from the public to do so in a way that minimizes damage to the ecosystem.

In Alberta, one such pair of eyes belongs to TROLS (Terrestrial and Riparian Organisms, Lakes and Streams) and they're locked on the boreal forest of northern Alberta. The forest is in the initial stages of harvesting and that presents a unique research opportunity for a team of 11 principal investigators led by EE Prepas and SE Macdonald of the University of Alberta. In the next five years, TROLS will examine how buffer strips of differing widths affect plant and animal communities in riparian and aquatic habitats around lakes and streams in northern Alberta.

Current forestry practices in Alberta require that harvesters leave an uncut strip of between 30 and 100 metres bordering permanent lakes and streams. Forest scientists have generally believed that these riparian buffer strips would protect aquatic ecosystems. However, there is only sparse scientific evidence to support current buffer strip guidelines because there has been little research on the effectiveness of buffer strips in aspen-dominated forests, and none on the northern forests of Alberta.

The objectives of the research project are: 1) to use these large-scale forest manipulations to examine the roles of riparian buffers in protecting aquatic habitat and as refugia from which plants and animals may recolonize harvested areas; and 2) to identify a biologically reasonable width for buffer strips, as a contribution to sustainable forest ecosystem management.



Lake SPH800, South Pelican Hills region

Twelve lakes, varying substantially in size and depth, have been chosen for study in three regions. Four lakes are located northeast of Lac La Biche, four are located east of the Town of Smith, and four are located in the South Pelican Hills area. Several streams south of Fort McMurray are also included in the project.

Pre-harvest (pre-treatment) sampling has just started and will continue to November 1996. Experimental harvesting will occur between then and February 1997. Post-harvest sampling will continue until late 1999.

The research is being initiated with a \$1.1 million Collaborative Special Projects (CSP) Grant from NSERC, the first ever CSP

grant to be based at the U of A. The program requires joint funding from public and private sectors (including Alberta Pacific Forest Industries), as well as a cooperative working arrangement between the University of Alberta and the private sector.

Joining Drs Prepas (director) and Macdonald (co-director) on the TROLS team are Drs SA Boutin, SJ Hannon, CA Paszkowski, RL Rothwell and WM Tonn, all with the U of A; Drs PA Chambers, JM Culp and FJ Wrona of the National Hydrology Research Institute in Saskatoon; and Dr B Pinel-Alloul of Université de Montréal. Each scientist has expertise in one or more areas of biology/forest science.

University actively discussing residence review with community

By Folio staff

The University is actively engaged in discussions with numerous community groups about the University's residence review.

"We've had more than nine meetings," says David Bruch. Bruch, Director of Housing and Food Services, was asked by the

Board of Governors in December 1994 to lead a review team to conduct a review of the University's six residences, starting with Michener Park.

"We are committed to meeting with people, listening to their concerns and taking into consideration their suggestions," added Bruch.

Bruch says he has heard a number of issues and concerns from stakeholders including:

- the need for the University to provide graduate and family housing in order to compete for quality graduate students;
- the need for students with families to be assured of quality housing, especially if those students are moving into Edmonton to get an education;
- the need for communities surrounding Michener Park to be assured that the future of the Park will not adversely affect them. Concerns include the impact on schools, community crime rates, and the potential for increased noise, traffic and commercial activity.

One of those expressing concerns is Silvia Gamper of the Michener Park Community Association. "The University is only looking at the financial value of the place,"

she says. Gamper says the University should be looking at the value of the Park to graduate students, to students with families and the value the Park has on the quality of life in the area.

Gamper is one of those organizing a large community meeting for Tuesday, 7 March, at 7:30 in the Vanier House Community Room at Michener Park.

Local businesses, politicians, church groups, area schools, and University organizations, as well as local media, have been invited to the meeting by the Michener Park Community Association.

In addition to the many meetings already held, Bruch says he has personally made phone calls to a half dozen other stakeholders and stakeholder groups.

In late December and early January Bruch made sure that stakeholders knew about the residence review through personal phone calls and follow-up letters.

Bruch continues to respond personally to enquiries regarding the process and the review. He can be reached at 492-4288. Those wishing more information about the 7 March meeting can contact Silvia Gamper at 430-3624.

RESIDENCE REVIEW – CHRONOLOGY OF EVENTS

December 1994

- Board Committee assigns review to David Bruch

December 1994 - January 1995

- Bruch contacts stakeholders by phone

January 1995

- Follow-up letters sent to stakeholders

16 January

- Meeting with Physical Education, University of Alberta

25 January

- Meeting with South West Area Council of Community Leagues (SWAC)

7 February

- Malmo Community League

9 February

- Michener Park Cooperative Management Committee and representatives from the Students' Union

13 February

- SWAC Michener Park subcommittee

17 February

- CBC interviews (2)
- Meeting with Students' Union President

21 February

- SWAC Michener Park subcommittee

27 February

- SWAC Michener Park subcommittee

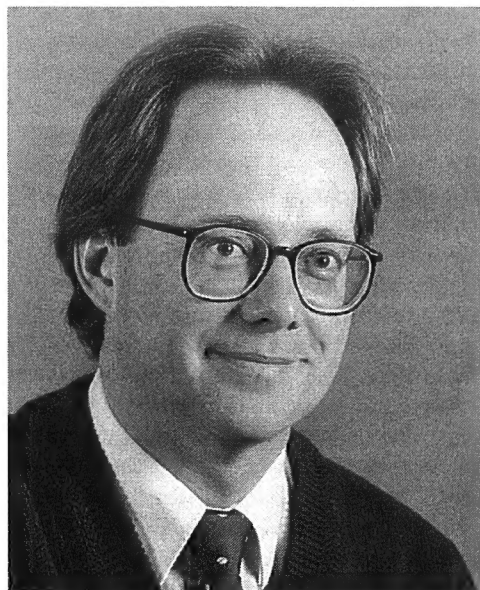


Photo Services

David Bruch, Director of Housing and Food Services, leads the residence review team.

Geology acquires SEM and microprobe

State-of-the-art technology helps department remain in forefront of research

By Michael Robb

The acquisition of a new, state-of-the-art field-emission scanning electron microscope (FE-SEM) and an electron microprobe by the Geology Department will help maintain that department's preeminent position in the country.

Geology Chair Brian Jones says it's highly unusual for the Natural Sciences and Engineering Research Council to award two major equipment grants to a single department in one year (1993-94 competition). "This equipment puts the department in a very strong position for future research."

Although both pieces of equipment will be housed in the Geology Department, they will be used by many researchers in three Faculties and 12 departments. Industrial users and graduate students will also have access to the equipment. It's expected more than 30 faculty members and at least that many graduate students will be using the new instruments.

The list price for the two pieces of equipment is estimated to be about \$1.5 million. Dr Jones explains that the department used a variety of strategies to raise supporting funding before applying to

NSERC for funding. "In each case, we approached the faculty members who used the equipment and asked them to contribute towards the costs. Once that had been secured, we approached other departments, the Dean of Science, and the Vice-President (Research) for additional support.

"In the case of the FE-SEM, we also obtained support from the Dean of Agriculture," Dr Jones explains. "This support played a vital role in our application to NSERC. The strategy was successful because NSERC awarded grants of \$208,000 for the SEM and \$835,000 for the electron microprobe."

The FE-SEM will be used to obtain very high magnification images of solid objects. The department's old machine was capable of producing good photographs at magnifications of 50,000 times—if conditions were ideal. The new machine is capable of producing images of up to 500,000 times and testing has already produced high resolution photographs showing surfaces at magnifications of 350,000 times. "This will allow us to look at structure that we have never been able to see before," Dr Jones says, add-

ing that the FE-SEM will allow detection of elements in any solid state material.

"Our new electron microprobe will be the most advanced instrument of its kind in the country in terms of its imaging and analytical capabilities," he enthuses. The microprobe is used to determine major element composition of minerals and other solid state materials. Unlike the old instrument, the new microprobe can detect and analyze for trace elements down to about 10 parts per million. It can also detect lighter elements such as nitrogen, carbon and oxygen, Geology Professor Tom Chacko explains.

This new equipment also helps the department maintain and enhance its relations with the industrial sector, says Dr Jones. Sherritt Inc, for example, sent a letter of support to NSERC for the acquisition of the new microprobe, and the company's staff is expected to use the new machine.

The department expects the new FE-SEM will be operational shortly. Installation of the electron microprobe will begin shortly and is expected to take a month or two

Stevenson coordinating first phase of MD program

Bruce Stevenson, of the Department of Anatomy and Cell Biology, is the new Phase 1 Coordinator of the Faculty of Medicine's MD program. Dr Stevenson, who takes over from Donald Spady, will lead the first year of the preclinical basic sciences program.

A relative newcomer to the Faculty (1989), Dr Stevenson rapidly gained a reputation as an outstanding teacher, having won Teacher of the Year and Outstanding Teacher Awards for three consecutive years. He is also actively involved in research, having been an MRC Scholar and currently holding an AHFMR Scholarship.

Dr Spady will continue teaching in the Faculty of Medicine and contributing to the recently formed Curriculum Innovation Committee.

ADI sponsoring professional development forums

By Terry Anderson

The Alternative Delivery Initiative (ADI) is designed to aid faculty and professional staff to use and critically evaluate the use of educational technologies. These technologies must improve access to university-level courses, while maintaining or improving learning and cost effectiveness. To assist in reaching these goals, the ADI is sponsoring a series of professional development activities during this term.

The first activity is an interactive video conference originating from the Institute For Academic Technology, University of North Carolina. This session examines two models of distance delivery—the classroom at a distance and independent study—and proposes that neither fully meets learning needs of today's teachers and students. It presents a model of network-based delivery of a student-centred learning curriculum. The session will be held on Thursday, 23 March, from 11 am to 1:30 pm in 231 Civil Electrical Engineering Building (Distance Learning Classroom).

The second activity is a series of workshops on the World Wide Web (WWW), the easiest and most widely used Internet tool with applications for promotion, teaching and commercial activities. The first session, on 22 March, introduces the WWW; the second session, on 7 April, shows how to create WWW home pages and other documents; the final session, on 19 April, looks at teaching and learning applications using WWW. Each session runs from 3:30 to 5:30 pm in 231 Civil Electrical Engineering Building.

Finally, the ADI and the Western Universities Telecourse Consortium will be presenting a lecture by Tony Bates, executive director of technology at the Open Learning Agency in Vancouver. Dr Bates is a leading expert on the effects of and integration of technology into distance education programming. His talk, which describes a vision of postsecondary education institutions in the 21st century, will take place 15 March at 2 pm in B129 Education South in conjunction with Instructional Fair '95.

In the interest of arranging suitable facilities for these sessions, please call Bev Adam at 492-7333 if you are planning to attend any of them.

New labs planned for Bamfield Marine Station

By Michael Robb

A British Columbia Government decision to help fund capital costs of building new laboratory facilities at the Bamfield Marine Station is good news, say researchers on this campus who use the facility.

Several faculty in the Department of Biological Sciences and at least that many graduate students use the facility on the west coast of Vancouver Island.

The 70-hectare field station, jointly operated by the Universities of Simon Fraser, Calgary, Alberta, British Columbia and Victoria, will be expanded by about 4,000 square feet, to include a molecular biology laboratory, a neurobiology laboratory, a fish physiology laboratory and a general purpose laboratory.

The new facilities, which include a boat repair shop, will cost about \$1 million, and will enable researchers to do more work on site, says Director Andy Spencer. About \$240,000 is being donated by the U of A, much of it from private donations, Dr Spencer explains. He is also hopeful a \$310,000 major equipment grant request, recently submitted by the station to the Natural Sciences and Engineering Research Council, will be successful.

Construction is expected to start soon and finish this June.

The Station is used for teaching as well as research. This summer, for example, 12 immersion courses are being offered at Bamfield, open to undergraduates, gradu-

ates and others. Each six-week course is equivalent to a full-year member university course, and a three-week course is equivalent to a one-half year member university course. (High school students in B.C. and Alberta also take field trips to Bamfield.)

Bamfield remains relatively inexpensive, Dr Spencer points out. (It has an annual operating budget of about \$1.6 million.) Field courses are increasingly being dropped from university curricula because they're so expensive, but the cost per student at Bamfield has remained relatively low, primarily because the Station is operated as a consortium.

Bamfield Marine Station allows the University of Alberta to maintain its strength in marine biology. And while there'll always be a tendency of prairie universities to be somewhat parochial, Bamfield allows U of A students to experience the marine environment, Dr Spencer says.

Brauss and Furuhashi in concert

By Gladys Odegard

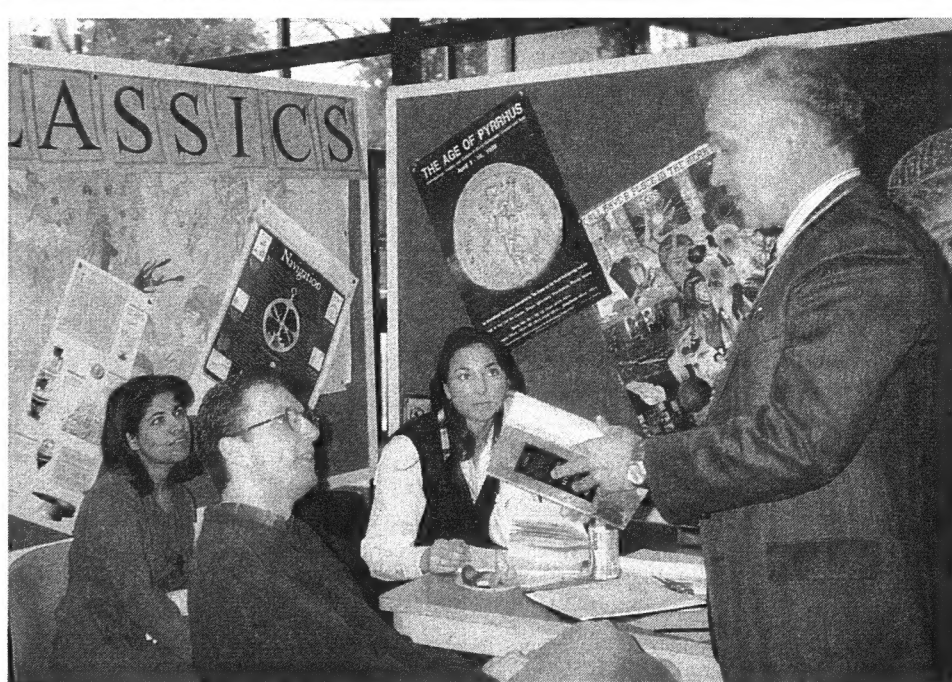
Helmut Brauss, piano, and Kuniko Furuhashi, mezzo-soprano, will perform a Lieder Recital on 4 March in the next concert in the Music at Convocation Hall series.

Dr David Gramit, Professor of Musicology in the University of Alberta's Department of Music, will present the pre-concert instruction at 7 pm, followed by a reception.

DT Baker, music critic for the *Edmonton Journal*, will be the guest host for the concert, which begins at 8 pm.

The program will include lieder by Rossini, Wolf, Brahms, Eben and de Falla.

Tickets, priced at \$10 for adults and \$5 for students and seniors, are available at the door or at the Music Department office at 492-0601.



Preview '95 a huge draw

Several thousand high school students from across the province converged on campus last week to get a "Preview" of the University. The two-day event included displays and exhibits, lectures, and tours of residences and campus. President Rod Fraser was one of many who visited the Classics Department display.

FOCUS ON Faculties Dentistry

Tenth part of a 16-part series on the University of Alberta's Faculties.
Next: Faculty of Rehabilitation Medicine

FACULTY FACTS

Mandate: To facilitate all aspects of education and research in dentistry and allied health and scientific fields; to contribute to the advancement of knowledge; to graduate competent undergraduate dentistry students, dental hygienists, graduate and postgraduate students; to provide the opportunity and stimulus for continuing learning; and to provide efficient and quality dental treatment to the community.

History: Established in 1917 as a school in the Faculty of Medicine; became a separate school in 1920. Offered its first full degree program in 1923; the first class graduated in 1927. Dentistry became a Faculty in 1944. Dental Auxiliary training began in 1961 and became the School of Dental Hygiene in 1962. A program of graduate studies was also approved in 1962. In 1994, the University administration proposed closing the Faculty as a cost-cutting measure. A Working Group is now developing a plan, due in May, for integrating Dentistry with the Faculty of Medicine by 1 April 1996.

Departments: Dental Health Care, Oral Biology, Restorative Dentistry, Stomatology

Degrees offered: Dental Hygiene Diploma, DDS, BSc, MSc, MSc in Orthodontics, PhD. Postgraduate training is available through the Division of Postgraduate Medical Education, Faculty of Medicine.

Projected operating budget, 1994-95: \$ 6.8 million

Enrollment: Undergraduate students: 262
Graduate students: 12

Academic staff: 32

Leadership: Acting Dean, HM Dick; Associate Dean, (Academic) KW Hinkelman; Associate Dean (Clinical Affairs), DM Collinson; Associate Dean (Research and Graduate Studies), GR Holland; Director, Clinics and Patient Care, John Woronuk; Director, Continuing Education SK Patterson

Prominent alumni: Drs Terry Donovan, Jim Wright and John Stamm are deans of Faculties of Dentistry in Canada and the US. Dr Bryun Sigstead is President, Canadian Dental Association and President, U of A Alumni Association. Past deans of Dentistry include Drs Ronald Jordan and Jack Neilson (U of Manitoba), and Dr Hector MacLean (U of A)

Dentistry focusing on the opportunities

By Elsa Roehr

"We are putting our energies into exploring the possibilities." That simple statement by Acting Dean Henry Dick sums up the attitude, and the strength, of the Faculty of Dentistry, a Faculty that is determined to leave its woes behind.

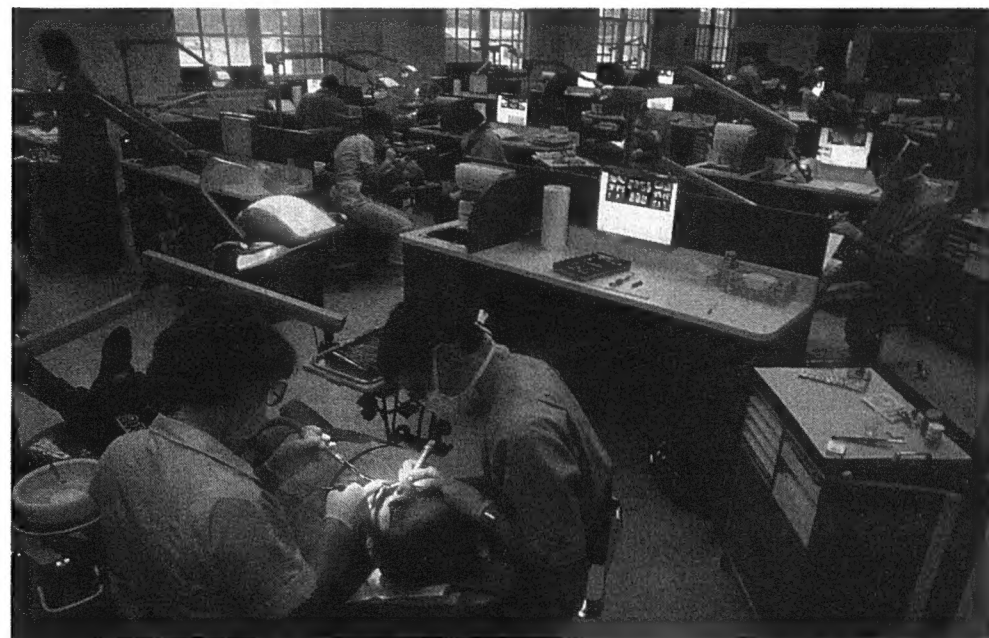
Exploring the possibilities means cooperation and collaboration. For Dentistry, as for all the other health sciences, it is a new, interdisciplinary world. "Government is taking a team approach to the provincial health care system," notes Dr Dick. "We have to prepare for the way things are going to be. That means being responsible, looking for the right mix."

Preparing for the future means working more effectively and more cooperatively with the other health science Faculties. "The Coordinating Council of Health Sciences has established two subcommittees; one on interdisciplinary teaching, the other on interdisciplinary research," Dr Dick says.

In education, Dentistry is exploring cooperation on courses whose core content is applicable, like anatomy, pharmacology and biology. Dentistry would design specific courses for "topping up" with discipline-specific content.

"Actually, the Deans of the health science Faculties have been getting together in discussion for more than two years. It's a move that was initiated three years ago when then-President Paul Davenport suggested all health science Faculties amalgamate into one super Faculty. The message was that we need to work more effectively. Since then, we've been driven by the need for cooperation." Budget cuts provided momentum. "It gave us a push," Dr Dick admits.

One outcome of budget cuts was reduced enrollment. The Faculty cut its DDS quota from 50 to 30 students. These smaller classes have now moved through the system; this is the first senior class of 30. "The



Hands-on experience in the student clinic on campus (pictured here) and in satellite clinics in northern Alberta prepares Dentistry students for work after graduation.

senior clinical program lost 40 percent of its class," Dr Dick says. "But over the last two years, the clinical staff have restructured the program. We've been able to maintain clinical revenue without sacrificing quality of education by increasing efficiency."

The bottom line is that fewer dentists are graduating. There are no reliable data on future needs for dentists; some data predict a shortage; others, an oversupply. "Given the average age of professionals in Alberta, together with more complex dental treatment by seniors, it is not unreasonable to predict a shortage," noted Dr Dick.

Preventive dentistry means more people are keeping their teeth into retirement. That means dentists are losing fewer patients to denturists. It also means more active treatment in older patients. For example, aging teeth may break away from larger fillings, and bridges are needed to replace lost teeth.

Dentists are also treating more patients for temporomandibular joint dysfunction (TMD). Dr Dick was quick to address a supposed link between the rise in TMD and stress. "Anything not well understood is blamed on stress," he said. Instead, he credits better diagnosis and treatment, and a better educated public.

In the area of prevention, Dentistry is well ahead of other health care disciplines. "Now, we are seeing a strong government focus on prevention and wellness," says Dr Dick. "We started practicing preventive dentistry in the early '60s. Preventive dentistry has meant a healthier society."

Research remains a challenge for the Faculty. "Most of our research was in oral biology," Dr Dick says. "In 1991, a big chunk was cut out of our Oral Biology Department. We used to have 10-12 oral

Continued on page 6

High marks for cooperative education

Cooperative education in Dentistry gets high marks from Evelyn Diduch. "It's a really good idea," asserts the fourth-year student. "It gives us a broader understanding and makes room for good outside influences."

She notes that Dentistry students already share courses with medical students in gross anatomy, microbiology and histology (the study of tissues). Neuroanatomy is learned with Occupational Therapy and Physiotherapy students.

Diduch feels this cooperative approach gives Dentistry students a stronger understanding by broadening the context among these studies. "Our studies tend to be very Dentistry-specific," she says. "These outside

influences help to broaden the scope of our learning."

Diduch is quick to point out that cooperation is not just with other Faculties, it's also with industry. Dentistry students develop close working relationships with practising dentists, and that experience and education is invaluable.

"The University, as an institution, is such a protected environment," she says.

Industry involvement begins between the second and third year as students go on a four-week rotation to satellite clinics in High Level, McClennan and LaCrete. Between the third and fourth year, students are granted temporary licenses and provide dentistry services under the watchful eye of

practising dentists. That kind of learning is only possible with full industry cooperation, and it's appreciated. "You get excellent experience," Diduch says.

The third and fourth years are mostly clinical, including two weeks in local hospitals. This experience includes evenings, weekends and emergency dentistry.

It all adds up to graduates who are ready to take on private practice. "With all the experience and exposure we get, I feel very prepared for graduation," Diduch says confidently.

Such positive experiences have paved the way for the proposed integration of Dentistry and Medicine. "It's going to be a positive thing," Diduch avows. "Students are going to benefit from this."

Team approach will make 'cutting edge' research better

Australian researcher Simon Wylie didn't let potential closure stop him from coming to the Faculty of Dentistry a year ago. "I saw it as a window of opportunity," he said. "North America is at the cutting edge in restorative dentistry, and Canada is part of that."

Ken Hinkelman, Associate Dean (Academic), agrees. "Clinically, our technology has really advanced in the last few years. It has really changed the face of clinical den-

tistry. Patients have a whole new range of options in treatment."

Dr Wylie is pleased with the proposed integration with Medicine. "Researchers in Dentistry had been pretty insulated," he said. "It doesn't help that there are few postgraduates, so there is less opportunity to team up."

Dentistry enjoys strong research linkages with some Faculties, like Engineering. But the integration offers opportunity to get

into more team research. "For example, in hardware: Medicine may have a particular appliance that we won't have to reinvent."

Dr Wylie hopes there will be greater resources as well. He echoes Acting Dean Henry Dick when he notes that the team approach attracts more funding and bigger research value.

"It can only strengthen our research," he said.

Arabic translation of Plato took courage as well as knowledge

By Ron Thomas

In the Arabian nights of 1989, Chuck Temraz was most assuredly a study in concentration.

Temraz, who now lives in Edmonton, was in the mountains outside Beirut, working on what would become the first full translation of Plato's *Republic* and 28 dialogues into Arabic. Exacting work, it was made more so by the civil war that was raging nearby. A member of Middle East Airlines' library staff, he translated "when-ever time permitted", often by candlelight and with bombs exploding as close as 1 km away.

"He worked with not only industry but devotion and love," Richard Bosley, Professor of Philosophy, remarked at the 16 February reception at which Temraz presented a seven-volume set of the translated works to the University of Alberta Library.

The translation project began on the first day of 1985 and concluded as 1992 drew to a close. Four volumes were translated in Lebanon and three were translated in Canada. "I depended on many books in my library and on other Greek thinkers to get through the tough spots," Temraz said at the reception.

"Nobody [in the Arab nations] knew Plato before. Arab thinkers didn't have the whole dialogues, only fragments, so they didn't fully understand him. Plato's work is

like a chain: you can't separate one link from another or it all falls apart."

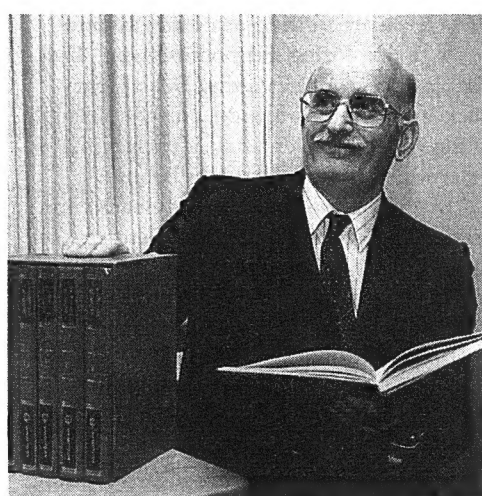
Two thousand of the seven-volume sets were printed in Beirut in 1994 and are doing such good business in the seven Arabic countries that a second and possibly third printing is likely.

Three of the sets will reside in Edmonton. In addition, to the Library, Temraz donated a set to the Heritage and Citizenship Secretariat and another to the Northern Alberta Heritage Language Association.

The reception wasn't the first time Temraz had been in the Library. From January 1990 to July of that year he collated and shelved the various Arabic-language volumes in the Library's possession. Unfortunately, while he made a favourable impression on Evelyn Sherry, the then personnel manager, and others, the Library wasn't able to extend his employment. (Temraz studied baking at NAIT and is a roll line operator at McGavin Foods Limited.)

Says Merrill Distad, Assistant Director, Library Development and Public Relations, "The University encourages scholarship in all the obvious ways and you don't think about giving an immigrant a job and then having him return a few years later with a remarkable gift."

Getting his translation published, presenting a copy of it to the Library and re-



Chuck Temraz and his gift to the University Library—the first-ever translation into Arabic of Plato's *Republic* and 28 dialogues.

newing acquaintances with staff led Temraz to say, "I'm not selfish, but right now I think that nobody is happier. I love Plato more than I love myself."

Reference Librarian Brian Champion said, "It's great to see the final result. Sometimes these ambitious, meritorious projects don't get completed for whatever reason."

Speaking of such projects, Temraz has completed the first translation into Arabic of the 24-section *The Pythagorom* and is now adding 13 letters of Plato to that volume.

Focus on Dentistry

Continued from page 5

biologists; now, we have only six. That doesn't meet our critical mass requirement. So we have to look at doing things differently."

He noted that research funders prefer to fund teams or centres of excellence, so researchers in Dentistry are looking to link themselves with other groups. Dr Dick offers an analogy: "We have one biochemist. Do we hire more biochemists to get a critical mass, or does our biochemist work with his counterparts in biochemistry and bring a Dentistry perspective to their research?"

The answer is obvious. And, with more than a dozen research centres in the health sciences, the opportunities for linkages are tremendous. Paul Scott, Chair of Oral Biology, is working with Lorne Tyrrell, Dean of the Faculty of Medicine, to put together a plan for enhancing research in oral biology.

Dr Dick sees the proposed integration of Dentistry and Medicine as facilitative. Still, the proposal was unexpected. "It caught us off guard. We felt dental education would stay, but thought it would be based on the model we proposed to the task force." That model called for a more independent Faculty operating with greater support from the profession, and with a business management approach to operating the clinics.

Representatives from Dentistry and Medicine are part of the Working Group on the Integration of Oral Health Sciences within the Faculty of Medicine. Chaired by Roger Smith, Acting Vice-President (Academic), the Working Group will present its integration plan to the Board of Governors in May with a decision expected in June. Integration would become reality in April 1996.

With disarming directness, Dr Dick states, "Dentistry should have started changing 15 years ago. We were so busy doing the thing right, we didn't look at whether or not we were doing the right thing. It's never too soon or too late to do it right."

From Self Help to the Divine Comedy

By Sonja Arntzen

It takes a scholar of broad interests and expertise to encompass Samuel Smile's *Self Help*, the guidebook for Japan's industrialization in the 19th century, and Dante's *Divine Comedy*. Sukehiro Hirakawa, Professor Emeritus of Tokyo University and Distinguished Professor at Fukuoka Jogakuin University, is such a scholar.

Professor Hirakawa, one of Japan's leading thinkers in the comparative study

of literature and culture, will visit the University of Alberta, 4-18 March, under the Distinguished Visitor Program.

Professor Hirakawa started his career as a student of Western literature and mastered French, English, German and Italian. He has the distinction of having done the authoritative and prize-winning Japanese translation of Dante's *Divine Comedy*. He is particularly intrigued by the relationship

and influence between cultures, particularly in the area of literature. Accordingly, his public lectures range over several topics (please see "Talks", page 9).

During his visit, Professor Hirakawa will be available for individual consultations; contact the Department of East Asian Studies at 492-2836.

New book details severe weather between 1879 and 1984

Professor Emeritus Keith Hage produces work

By Michael Robb

There's an old saying about Alberta weather: If you don't like the present conditions, just wait five minutes and they'll change.

Alberta is also well known for its dramatic hailstorms, lightning and tornadoes. Since 1984, the Alberta Weather Centre of Environment Canada has published annual summaries of severe storms. Prior to that, however, no systematic records were kept.

A Professor Emeritus of Geography, Keith Hage, has spent the last two decades or so filling in the gaps. Using his expertise in meteorology, Dr Hage scoured newspapers, community histories and other sources of information on destructive winds and lightning in the province.

He produced "Alberta Tornadoes, Other Destructive Windstorms and Lightning Fatalities, 1879-1984", and recently pre-



Professor Emeritus Keith Hage, second from right, presents his recently completed work, "Alberta Tornadoes, Other Destructive Windstorms and Lightning Fatalities, 1879-1984", to the Meteorology Division of the Geography Department. Shown with Dr Hage are, from left, John Wilson, Gerhard Reuter, Bob Charlton, and Edward Lozowski.

sented that work to the Meteorology Division, Department of Geography.

The document will be a gold mine of information for students and researchers, says Laura Smith, Secretary of the Division and Supervisor of the Richmond W Longley Memorial Research Room.



Upstairs, downstairs

Grade 6 girls from city schools scurry down CAB's steps to check on the paper helicopters they released from the third floor. They were on campus recently for Choices '95, a conference that, through observation and hands-on activity, conveys to them the words of PB Sears and William Kessen ("Science is not memory nor magic but rather a form of human curiosity.")

This was the fifth year for Choices, and it had the largest attendance yet: There were about 200 students in 1990 and 860 this year (430 on each of the two days). The increase was made possible in part by financial support from Human Resources Development Canada.

Particle physicists elated that lab in Europe will be expanded

U of A group among elite researchers working at huge 'world laboratory'

By Michael Robb

Most professors' laboratories are just down the hall. Occasionally, they're in other buildings. Pity the University of Alberta's particle physicists, then, since one of their most important laboratories is a continent and an ocean away, entrenched under the picturesque French and Swiss countryside, close to Geneva.

The European particle physics laboratory, CERN, has been home to a great deal of work carried out by these scientists and they are ecstatic about the recent announcement of a major new project—the large hadron collider (LHC)—at CERN. Besides being involved with the construction of the new machine, the particle physicists will also play a key role in the design and construction of crucial elements of a half-billion dollar super sensitive detector, called ATLAS. ATLAS is one of the two main experiments planned for the LHC.

"It's been exciting for everyone over these past few weeks, to know they're involved in frontier experimentation with the most advanced technology in the world," says Peter Kitching, Director of the Physics Department's Centre for Subatomic Research (CSR).

Since CERN's founding in the 1950s, particle physicists, from a number of countries including Canada, have conducted fundamental experiments that have contributed, discovery by discovery, to the understanding of the early stages of the creation of the universe and the fundamental nature of matter. Particle physicists are hopeful that experiments conducted on the LHC will extend the understanding of the laws that govern the fundamental particles of matter. The key to this understanding is the Higgs particle; the U of A team will be involved in the search for this particle.

The LHC, which will be installed in the same 27-kilometre underground tunnel as the existing large electron positron (LEP) collider, is expected to be ready for use in 2004. It is designed to bring two proton beams together at an energy of 14 million million electron volts. When those beams collide, an intense micro-fireball will shoot out hundreds of new particles. Those flashes of energy will allow researchers to probe the interactions between the tiny

quark constituents hidden deep inside the colliding protons and, hopefully, reveal new understanding of how nature works at its most fundamental levels.

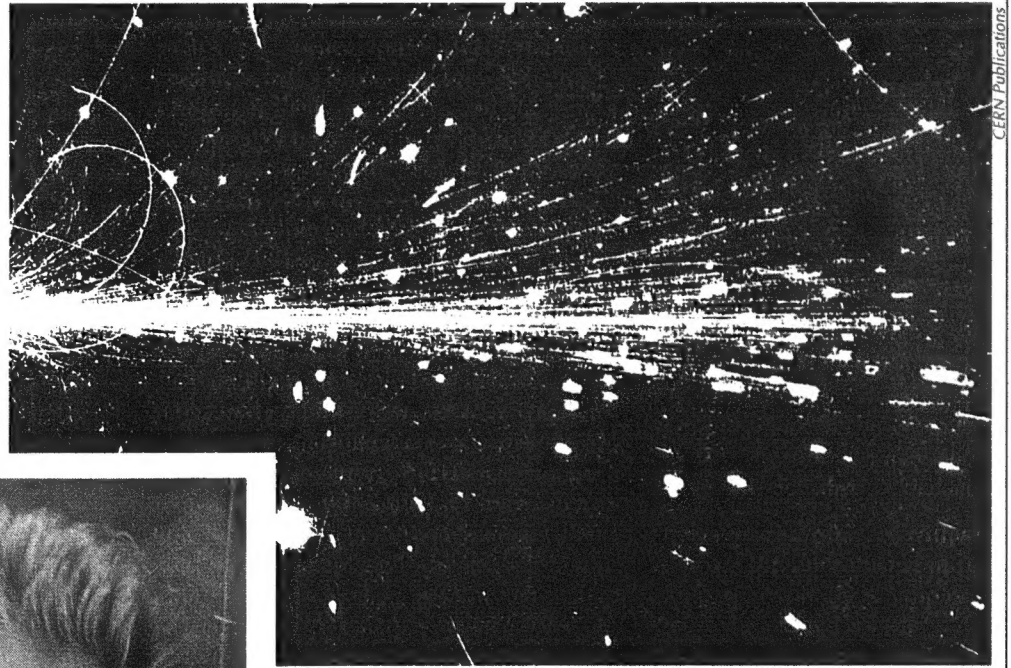
CERN has become a "United Nations of Science", explains James Pinfold, who is the next director of the CSR and leader of the U of A's high energy physics effort. The annual budget of the facility is about \$800 million and more than half of the world's particle physicists conduct research there. Moreover, with the decision of the United States Government not to construct a state-of-the-art superconducting super collider in Texas, the LHC collider at CERN will become the highest energy collider ever, and what Dr Pinfold describes as, "the first world laboratory".

The U of A's—and likewise, Canada's—participation in that laboratory is already under way. Although Canada, the USA and Japan are not member states of CERN, top researchers from these countries are welcome to conduct research there because of their established international reputations. Countries such as Canada, however, are being "encouraged" to contribute some money to help build and operate the facility.

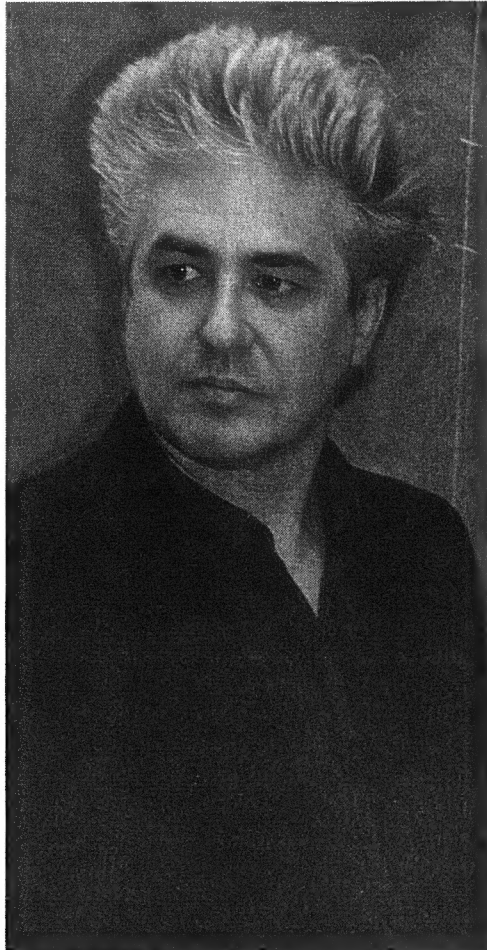
U of A physicists have also been involved in TRIUMF, a smaller scale facility in Vancouver, and Canada's only national laboratory dedicated to subatomic physics. That facility is managed by four Western universities, including the U of A, and is operated with money from the National Research Council. U of A physicists' involvement with TRIUMF is important for the development of particle physics in this country, says Dr Pinfold. The potential Canadian contribution to the LHC machine at CERN would be channeled through TRIUMF, and it's likely the funding would be provided "in kind" as Canadian high technology products of equal value, he explains.

According to Dr Pinfold, U of A researchers' continuing participation at CERN has been primarily based on the excellence of their reputation and the superb technical backup provided by CSR and the Physics Department. In fact, the University recently recognized the high energy particle physics group of the Centre for Subatomic Research as an emerging area of excellence.

Certainly, the U of A's participation in this fundamental research will have spinoff benefits, says Dr Pinfold. "Our particle physicist group will remain at the forefront of their discipline." Technologists, graduate students and computing science experts here



A nucleus of sulphur in high energy collision with a nucleus of gold after being accelerated in the CERN super proton synchrotron. These collisions approach the densities of matter of the early universe when a quark-gluon plasma prevailed. It will be an additional ability of the large hadron collider (LHC) to take these beams of nuclei, accelerate them to still higher energies and bring them into head-on collision. Here again the LHC will be creating conditions which have not occurred since almost the instant of creation.



James Pinfold, leader of the University of Alberta's particle physics initiative.

will be involved in one of the world's most exciting scientific adventures, something Dr Pinfold describes as "the inner-space race". It's particularly exciting to have students involved, says Dr Kitching. High-tech equipment, such as the super-sensitive detectors being developed right here, could have important medical and industrial ap-

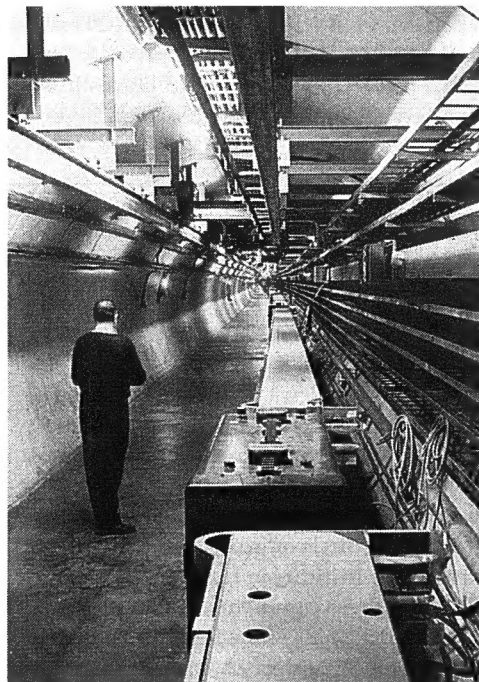
the use to which his early experiments could be put. "I know not," replied Faraday, "but I wager that one day your government will tax it." A tax on electrical generation was implemented in 1880.

Other U of A physicists involved include: Bill Burris, Robert Davis, Douglas Gingrich, Peter Green, Gordon Greeniaus, John Hewlett, Lars Holm, Philip Kayal, Peter Kitching, Shayne Mullin, Bill Olsen, Dugan O'Neale, Nathan Rodning, Jan Schaapman, Jan Soukup and John McDonald, former Acting President, who will be spending a study leave at CERN.

The work also involves Computing Science Professor Bill Armstrong, who is working with the particle physicists to develop "thinking" computer chips to perform ultra-fast pattern recognition for the ATLAS detector. "Physicists do a lot of high-speed computation," Dr Armstrong explains, adding that they want to learn from real measurements what's happening during these collisions. Department of Electrical Engineering professors on this campus have also been involved, and have designed a fast memory unit. And, finally, Chemistry Professor Gordon Freeman's work on highly irradiated rare gases was invaluable in the design of another key element in the ATLAS detector, points out Dr Pinfold.

The decision to go ahead with the LHC at CERN was a triumph for particle physicists throughout the world, who were despondent after the cancellation of the superconducting super collider in Texas. "I am honoured by this vote of confidence in fundamental science," Director General Chris Llewellyn Smith said when the announcement was made late last year.

European countries spend far more money on particle physics than Canada, adds Dr Kitching. Particle physics research has essentially become an international effort, however. No one country can foot the bill for such complex and expensive facilities.



The Large Electron Positron collider at CERN

'Why Research?' is theme for Science Visiting Committee

Suggests new courses needed in technology transfer

By Judy Goldsand

Is basic research being undervalued because there are no obvious immediate payoffs? How can the independence required for basic university research be balanced against the community's need for the results of targeted research?

Universities are feeling pressure to do more research in line with short-term goals of governments and the private sector, the 21 members of the Faculty of Science Visiting Committee were told during their meeting held 17 February. One Faculty member said there is a certain level of concern among his colleagues about the recent "bandwagon" approach to targeted research.

Don Currie, managing director of the Alberta Chamber of Resources and co-chair of the Visiting Committee, declared, "There is nothing like a cash crunch to make you [the Faculty] reexamine your role." Lynne Duncan, Deputy Minister of Alberta Advanced Education and Career Development, remarked that the public wants University research to be relevant to their needs.

Visitor John McDougall observed that the community wants the University to do more targeted research. University research can be "free, but not entirely unfettered", he suggested. Several participants agreed that there is a continuum from basic to applied

research, and that both types are important to society.

The challenges facing universities in the commercialization of basic research findings was another focus of discussion for the Visiting Committee.

It takes special skill to translate knowledge to the marketplace, said Daniel Kenway, president of Vision Smart. He submitted that the private sector has more expertise in technology transfer than the University and should play the primary role in

commercialization of research findings while "making sure that the University research is given credit."

Several Visitors agreed with a suggestion that there would be demand for courses (perhaps in partnership with the Faculty of Business) dealing with commercialization of research.

Dean Dick Peter acknowledged that Faculty members have to be more aware of recognizing opportunities for technology transfer. "If research leads that way, we should

make every effort to carry through, for the benefit of the University."

The Visiting Committee Program is very beneficial from the Faculty's perspective, said the Dean. "It is important to have the public know what we are doing, and the interchange with business and community leaders gives us fresh ideas and leads to many new connections with industry for our students."

Below is a summary of the talk given by Robert Moody (Mathematical Sciences) to the fifth annual Visiting Committee in the Faculty of Science on 17 February.

Why curiosity-driven research?

Why do we spend money on research with no direct foreseeable applications?

By Brian Dunford

It is a profound and necessary truth that the deep things in science are not found because they are useful; they are found because it was possible to find them.

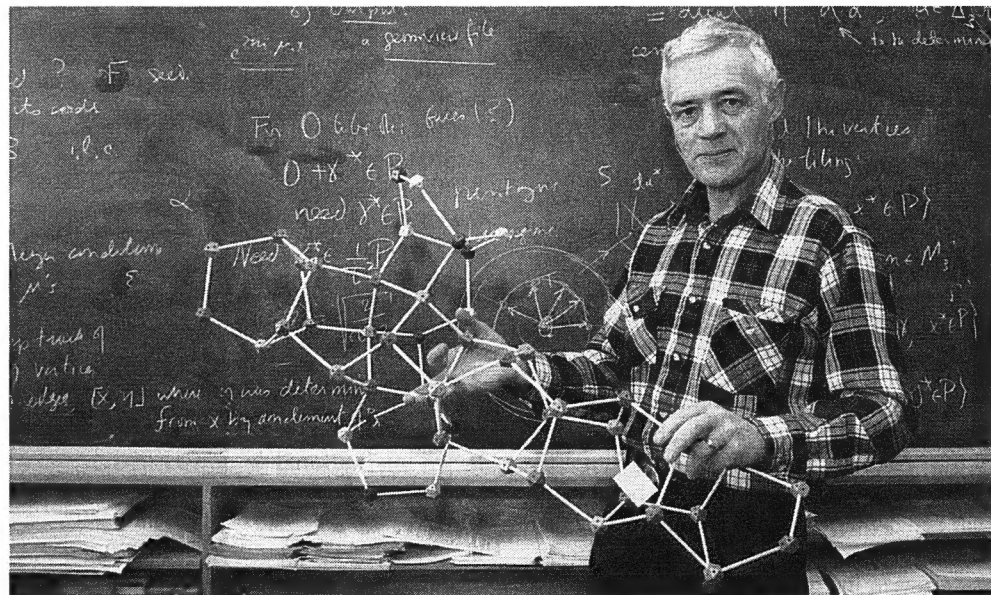
Robert Oppenheimer

Imagine asking a group of engineers of 125 years ago to create a CD player that could reproduce music in high fidelity, store the music in digital form on small disks that are robust and cheap to make, that are not affected by dust and small scratches, and that are never physically touched by the device that reads them. This was completely beyond the science and technology of that time.

In fact, the CD player is an amazing testament to twentieth century science, bristling with lasers, microchip computers and utilizing error-correcting codes, digital wave sampling, the physiology of the ear and the technology of plastics and semiconductors.

The compact disc player, which started as a joint venture of Philips and Sony in 1980, would not have been possible if all of the necessary curiosity-driven (basic) research were not already in place. It exemplifies how basic research is the foundation for later targeted research.

Dr Robert Moody described the origins of two of the components necessary to develop a CD player—the laser, and error correction codes. The laser produces coherent light, which is light waves that are in phase with each other. Einstein proposed a way of generating coherent light in 1917, but no one figured out how to implement it until 40 years later. The laser light scans,



Dr Moody holds a model of an aperiodic tube of atoms based on tetrahedral symmetry.

per second, more than four million bits of information stored in depressions or pits in the laser disc. Reflected light is collected both from the flat surface of the disc and from the pits. Because of the different distances, the laser light from the pits is thrown out of phase from that collected from the flat surface. This phase difference (change in the intensity of light) is read and digitized in the process of producing sound.

Without the error correction code, CD music would sound like it came from a badly scratched LP record. The data encoded on the compact disc is converted into binary words. Of some 4 billion such words only a fraction of them are considered "legal". The correction process converts any

defective word (caused by defects in the disc, scratches, or dust) into the nearest legal counterpart, and does it virtually instantly. As an analogy, "university" would be converted to "university". Development of error correction codes during the 1960s was based on scientific discoveries in 1830 by Evaste Galois in an area of algebra (the finite field theory).

Dr Moody emphasized that curiosity-driven research is not aimless. Although it is not targeted toward achieving a specific result, it is directed toward a scientific aim. "You can't tell what will be useful 200 years in the future. If universities simply do targeted research, science would be destitute in a very short time," he predicted.

CORRECTION

An article in last week's *Folio* on Provincial Treasurer Jim Dinning's visit to the Faculty of Business gave the wrong date for the Faculty's Canadian Business Leader Award dinner. The dinner will be held Tuesday, 21 March, at the Westin Hotel.

AWARD OPPORTUNITIES

ALUMNI ASSOCIATION AWARDS

Distinguished Alumni Awards

A maximum of three Distinguished Alumni Awards will be presented to recognize "exceptional contributions to a profession and/or outstanding contributions and service to the University of Alberta, society or the welfare of others."

Alumni Golden Jubilee Award

The Alumni Golden Jubilee Award was initiated in 1958 to honour individuals who have contributed to the welfare of the University, either directly or indirectly. Nominees need not be graduates of the University.

Nominations are requested for these prestigious awards, which will be presented on 30 September 1995, at the Reunion Weekend Gala Dinner.

For further information and to request official nomination forms, please contact:

Communications Committee
Office of Alumni Affairs
450 Athabasca Hall
University of Alberta T6G 2E8.
Phone: 492-3224.

The deadline for receipt of nominations is 31 March 1995.

DIRECTOR, CANADIAN CIRCUMPOLAR INSTITUTE - PERFORMANCE REVIEW

In keeping with General Faculties Council Policy (GFC 103.4.4), a review is under way to evaluate the performance of the Director of the Canadian Circumpolar Institute (CCI). Dr Cliff Hickey will have completed five years as Director by 30 June 1995.

The Canadian Circumpolar Institute is an Interdisciplinary Research Unit that reports to the Vice-President (Research). Founded 1 July 1990, the CCI is the University of Alberta centre for research on the northern regions of Canada and other circumpolar regions, serving Northerners, students, industry, government, and the general public. The Institute's mandate is:

- to promote and support research on the circumpolar north, especially that involving inter- and multi-disciplinary programs;
- to promote and support the Canadian Circumpolar Library as a distinctive northern research collection of international importance;
- to foster communication among northern-oriented researchers;
- to encourage the involvement of Northerners from all circumpolar nations in the activities of the Institute; and,
- to disseminate information about the circumpolar north.

The Director also chairs the University of Alberta Northern Research Committee and is an *ex officio* member of the Advisory Board of the CCI.

We solicit views on the performance of the Director from the University community and from Northerners with an interest in the activities of the CCI. At this time we would also gratefully receive any comment from individuals or groups on the effectiveness of the Institute in fulfilling its mandate. Please address comments, before 31 March 1995, to the Chair of the Review Committee, Dr William A Bridger, Associate Vice-President (Research), University of Alberta. (Phone 492-5320; fax 492-3189; e-mail: WILLIAM.BRIDGER@UALBERTA.CA).

ACCOUNTING AND MANAGEMENT INFORMATION SYSTEMS

6 March, 1:30 pm

Salvador Ruiz-de-Chavez, National University of Mexico, "A Comparison of Accounting Education in Mexico and the United States." 4-16 Business Building.

6 March, 3:30 pm

Professor Ruiz-de-Chavez, "General Aspects of Doing Business in Mexico" and "The Economic Evolution of Mexico 1982-1994 and The North American Free Trade Agreement." B-05 Business Building.

ADVANCED ENGINEERED MATERIALS CENTRE

10 March, 2:30 pm

Leszek A Utracki, senior research officer and past head of the Industrial Polymers Section of the Industrial Materials Institute of the National Research Council Canada, "Polymers and Their Blends." RSVP: 492-0416. 2-3 Mechanical Engineering Building.

AGRICULTURAL, FOOD AND NUTRITIONAL SCIENCE

9 March, 3:30 pm

Lanita Carter, director, Centre for Management Development, Memorial University of Newfoundland, "Understanding Consumer Preferences." 559 General Services Building.

15 March, 11 am

Dr Carter, "Usefulness of a Focus Group in Foods Research and Marketing." 1-13 Agriculture-Forestry Centre.

16 March 3:30 pm

Dr Carter, "Finding a Market for Your Product." 559 General Services Building.

16 March, 6 pm

Dr Carter, "The New Product Development Process from a Marketing Point of View." 1-13 Agriculture-Forestry Centre.

17 March, 4:15 pm

Tai Aung, Agriculture and AgriFood Canada, Winnipeg, "The Use of Cytogenetics in the Improvement of Crop Species." 1-30 Agriculture-Forestry Centre.

ALBERTA HERITAGE FOUNDATION FOR MEDICAL RESEARCH

6 March, 9 am

Chris McMaster, Duke University Medical Center, Durham, North Carolina, "Using Chimeric Enzymes to Explore Membrane Biogenesis." Host: Lipid and Lipoprotein Research Group and Anatomy and Cell Biology. 207 Heritage Medical Research Centre.

9 March, 9 am

Luc Berthiaume, Sloan-Kettering Institute, New York, "Fatty Acylation: New Perspectives in Metabolic Regulation and Signal Transduction." Host: Lipid and Lipoprotein Research Group and Anatomy and Cell Biology. 207 Heritage Medical Research Centre.

13 March, 9 am

Zheng Cui, "Molecular Probing of the Biological Role of Phospholipid Methylation in Liver." Host: Lipid and Lipoprotein Research Group and Anatomy and Cell Biology. 207 Heritage Medical Research Centre.

ANTHROPOLOGY

3 March, 3 pm

Brian Noble, "The Sage of Human Liberation: Demastering Nature/Culture in Haviland's *Anthropology*, 7th Edition." 14-28 Tory Building.

10 March, 4 pm

Carl Urion, "So Mean and Cranky I Could Bite My Mother", Adapting an Old-Fashioned Analytic Technique to Text Data in Order to Find Out What 261 Women Were Telling Researchers About PMS." 14-28 Tory Building.



BIOLOGICAL SCIENCES

3 March, 4:15 pm

Bill Paranchych, "Bacterial Pili: From Sex to Synthetic Peptide Vaccines." 3-27 Earth Sciences Centre.

10 March, 4:15 pm

Barry Shane, Department of Nutritional Sciences, University of California, Berkeley, "The Regulation of Folate and One-Carbon Metabolism." 3-27 Earth Sciences Building.

17 March, 4:15 pm

Tai Aung, Agriculture Canada, Winnipeg, "The Use of Cytogenetics in the Improvement of Crop Species." 3-27 Earth Sciences Building.

CANADIAN INSTITUTE OF UKRAINIAN STUDIES

10 March, 7:30 pm

David Marples, "Ukraine's Crimea Problem: Past and Present." Heritage Lounge, Athabasca Hall.

16 March, 7:30 pm

30th Annual Shevchenko Lecture. Mark von Hagen, director-elect, Harriman Institute, Columbia University, "Rethinking Ukrainian History: Russian and East European Studies Faces an Independent Ukraine." Sponsor: The Ukrainian Professional and Business Club of Edmonton. L-1 Humanities Centre.

CATHOLIC CAMPUS MINISTRY

7 March, 7:30 pm

Rose Marie Hague, "Understanding Catholicism Today—A Spirituality of Marriage." Newman Centre, St Joseph's College.

CHEMICAL ENGINEERING

9 March, 3:30 pm

LA Utracki, National Research Council, "Rheology of Polymer Blends." 342 Chemical-Mineral Engineering Building.

CHEMISTRY

13 March, 11 am

Alan Weedon, Department of Chemistry, University of Western Ontario, "Synthetic and Mechanistic Organic Photochemistry; Properties of 1,4-Biradical Intermediates." V1-07 Physics Wing.

COMPARATIVE ANIMAL PHYSIOLOGY AND CELL BIOLOGY

7 March, 12:30 pm

Bev Mitchell and Marie-Pascale Rivet, "Integration of Primary Taste Input in Higher Flies." G-114 Biological Sciences Centre.

14 March, 12:30 pm

Rebecca Guy, "The Surface of the Amastigote Stage of the Protozoan Parasite, *Leishmania Major*." G-114 Biological Sciences Centre.

COMPUTING SCIENCE

13 March, 3:30 pm

Kenneth C Sevcik, professor of Computer Science with a cross-appointment in Electrical and Computer Engineering, University of Toronto, "Predicting and Improving Performance in Numa Shared-Memory Multi-Processors." 2104 Dentistry/Pharmacy Centre.

EAST ASIAN STUDIES, COMPARATIVE STUDIES AND HISTORY

7 March, 3:30 pm

Sukehiro Hirakawa, Distinguished Professor, Fukuoka Jogakuin University,

"Lafcadio Hearn Rediscovered." L-2 Humanities Centre.

9 March, 3:30 pm

Professor Hirakawa, "Samuel Smiles's *Self-Help*: The Best Selling Guidebook for Japanese Industrialization in the Latter Half of the Nineteenth Century." L-2 Humanities Centre.

14 March, 3:30 pm

Professor Hirakawa, "The Divine Comedy: Attempts at a Japanese Interpretation." L-2 Humanities Centre.

16 March, 3:30 pm

Professor Hirakawa, "Prisoners in Burma: Anglo-Japanese Hostilities in a Cultural Perspective." L-2 Humanities Centre.

ENGLISH

7 March, 12:30 pm

Heather Zwicker, "Queering the Post-Colonial Nation: Daphne Marlatt's *Anahistoric*." 4-29 Humanities Centre.

13 March, 3:30 pm

Henry Abelow, Department of English, Wesleyan University, "George Berkeley and the Indians." L-1 Humanities Centre.

14 March, 12:30 pm

Andrew O'Malley, "Leave it to the Experts: Paediatric Advice Books and Medical Authority in the Late Eighteenth Century." 4-29 Humanities Centre.

16 March, 3:30 pm

Professor Abelow, "The Queering of Lesbian/Gay History." L-1 Humanities Centre.

ENGLISH - EDMUND KEMPER BROADUS LECTURES

Juliet McMaster, will lecture under the general topic, "The Body Legible in the Eighteenth-Century Novel."

6 March, 4 pm

"Facial Expression: The Meaning Countenance." L-1 Humanities Centre.

8 March, 4 pm

"Reading the Body in *Clarissa*." L-1 Humanities Centre.

ENTOMOLOGY

9 March, 4 pm

Carole Challoner, "Characterization of the White Eye Colour Mutant in the Tsetse Fly, *Glossina morsitans submorsitans* (Diptera: Glossinidae)." TB-W1 Tory Breezeway.

16 March, 4 pm

Donna White, "The Cutting Edge: Common Tansy Response to Simulated Insect Herbivory." TB-W1 Tory Breezeway.

EXTENSION

15 March, 7:30 pm

Donald Schopflocher, "Chronic Fatigue Syndrome: Physical or Psychological." \$5 at the door. Call 492-3093 to preregister. L-2 Humanities Centre.

FACULTÉ SAINT-JEAN

3 mars, 8h45

Journée du Savoir. Organisée par l'ACFAS-Alberta. Renseignements: 465-8769. Salles 247 et 150, Faculté Saint-Jean.

GEOGRAPHY

3 March, 3 pm

Lingyan Xin, "Effects of Convergence on Precipitation." 3-36 Tory Building.

10 March, 3 pm

Tim Oke, Department of Geography, University of British Columbia, "The Import-

tance of Diversity in Research Approach: Studies in Urban Climate." 3-36 Tory Building.

GEOLOGY

9 March, 11 am

John Wilson, "Windflow Through a Forest on a Ridge." 1-04 Earth Sciences Building.

GERMANIC LANGUAGES

10 March, 4 pm

K-Richard Bausch (Bochum), "Das Lehren und Lernen von Deutsch als Fremdsprache: Neuere Tendenzen und Entwicklungen aus unterrichtsmethodischer Sicht." Senate Chamber, Arts Building.

HISTORY AND ST. STEPHEN'S COLLEGE

15 March, 7:30 pm

Curtis Bostick, University of Arizona, "Battling the Beast—Apocalyptic Scenarios from Wittenberg to Waco." Preregister: 439-7311 or 433-8875 (fax). Mountain Room, St. Stephen's College.

HUMAN ECOLOGY

7 March, 3:30 pm

Issues in the North. Stewart Jay Cohen, environmental adaptation research group, Environment Canada, "What if the Climate Warms? Implications for the Mackenzie Basin." Main Floor Chapel, St. Stephen's College.

9 March, 1 pm

Shawna Lemiski, "A Review of the Effect of Weighting on Silk Degradation." 131 Home Economics Building.

16 March, 1 pm

Jennifer Morton, "Pitjantjatjara Women and the Rise of Ernabella Arts Inc: An Australian Desert Experience." 131 Home Economics Building.

LIMNOLOGY AND FISHERIES

DISCUSSION GROUP

9 March, 12:30 pm

Todd Sellers, "Distribution of Lake Trout and *Mysis relicta* in Small Canadian Shield Lakes: Temperature, Oxygen, and Light Characteristics of Their Habitat." G-116 Biological Sciences Centre.

16 March, 12:35 pm

Keith Jackson, "Systematics Made Easy: Phylogenetic Position of Two Tadpole Sculpins Resolved and Explained!" G-116 Biological Sciences Centre.

MUSIC

7 March, 3:30 pm

Richard Troeger, "A Musical Pre-Raphaelite: Arnold Dolmetsch." 2-34 Fine Arts Building.

PETER JACYK CENTRE FOR UKRAINIAN HISTORICAL RESEARCH

17 March, 3:30 pm

Mark von Hagen, Department of History and Harriman Institute, Columbia University "The Great War and the Emergence of a Modern National Identity in Ukraine." 352 Athabasca Hall.

PHILOSOPHY

3 March, 3:30 pm

Marc Ereshefsky, Department of Philosophy, The University of Calgary, "Unity and Disunity in Biological Classification." 4-29 Humanities Centre.

PHYSICS

3 March, 2 pm

DJ Scalapino, Department of Physics, University of California at Santa Barbara, "Where Are We in High T_c Superconductivity." V-129 Physics Building.

PHYSIOLOGY

3 March, 3:30 pm

Marek Duszyk, "Ion Channels in Human Airway Epithelial Cells." 207 Heritage Medical Research Centre.

10 March, 3:30 pm

Ching Kung, Laboratory of Molecular Biology, University of Wisconsin, "A Large Conductance Mechanosensitive Channel: Biophysics and Molecular Biology." 207 Heritage Medical Research Centre.

17 March, 3:30 pm

Keir Pearson, "Nervous Control of Walking." 207 Heritage Medical Research Centre.

PSYCHOLOGY

10 March, 1 pm

Bob Frender, "Can Roles of Heredity and Environment be Disentangled? Latest Thoughts of the Last True Believer in the Concept of Heritability." P-218 Biological Sciences Centre.

RENEWABLE RESOURCES

9 March, 12:30 pm

Claudia Palylyk, "Unraveling Environmental Law." 2-36 Earth Sciences Building.

14 March, noon

Patrick Moore, director, Forest Practices Committee, Forest Alliance of B.C., Vancouver, "Ecology, Politics and Clearcutting." 2-1 Mechanical Engineering Building.

15 March, noon

Marty Luckart, "The Allowable Cut Effect (AEC) in Canadian Forest Policy." 849 General Services Building.

16 March, 12:30 pm

Yongsheng Feng, "Dewatering Oil-Sand Fine Tails by Evaporation." 2-36 Earth Sciences Building.

RESEARCH SEMINARS IN EARLY WOMEN

14 March, noon

Marianne Henn, "'Methinks there is nothing more disagreeable than to be put up as model' (*Justine*, 266): Caroline Auguste Fischer, an Uneasy Contemporary." Senate Chamber, Arts Building.

RURAL ECONOMY

6 March, 3:15 pm

Ron Weisenberger, Policy Secretariat, Alberta Agriculture, Food and Rural Development, "Future Directions for Farm Safety Nets." 519 General Services Building.

9 March, 2 pm

Allan Walburger (candidate for the marketing economics position in Rural Economy), postdoctoral fellow, Department of Economics, University of Lethbridge, "Modelling and Testing the Efficiency of Price Discovery in Live Cattle Markets: A Linear Systems State Space Approach." 519 General Services Building.

SIGNAL TRANSDUCTION LABORATORIES

8 March, noon

Tamas Zakar, "Agonist-dependent Regulation of Cyclooxygenase Expression in Human Amnion Cells." 5-10 Medical Sciences Building.

SLAVIC AND EAST EUROPEAN STUDIES

8 March, 3 pm

Natalia Buriannyk, "Love is But a Dream: The Experience of Incarceration." 436 Arts Building.


SOCIOLOGY

8 March, noon

Trevor Harrison, "The Worth of a Human Being: Harold Innis and the Human Body as Commodity." 5-15 Tory Building.

10 March, 10:30 am

Robert Stebbins, Department of Sociology, The University of Calgary, "Francophones Outside Quebec: Change and Adaptation." 5-15 Tory Building.

 This symbol denotes environmentally-related seminars/events. If you wish to have an environmentally-related event listed in this way, please contact: The Environmental Research and Studies Centre, 492-6659.

EVENTS

EXHIBITIONS

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FILMS

GERMANIC LANGUAGES

7 March, 7:15 pm

"Peppermint Frieden" (1985) German. 141 Arts Building.

MUSIC

DEPARTMENT OF MUSIC

4 March, 8 pm

Music at Convocation Hall featuring Kuniko Furuhashi, mezzo-soprano, and Helmut Brauss, piano. Program will include works by Wolf, Eben, Brahms, de Falla and Rossini. Lecturer: David Gramit. Guest host: DT Baker, critic, *Edmonton Journal*. Admission: \$10/adults, \$5/students and seniors. Convocation Hall.

5 March, 3 pm

4th Edmonton New Music Festival: Pro Coro Canada Composers' Competition Finals. Admission: \$5. Festival passes: \$40/adults, \$30/students and seniors. Convocation Hall.

5 March, 8 pm

4th Edmonton New Music Festival: Lawrence Cherney, oboe; William H Street, saxophone; Roger Admiral, piano. Program will include works by Truax, Cherney, Takemitsu, Karlins and Patch. Admission: \$5 or Festival pass. Convocation Hall.

8 March, 12:10 pm

Noon-Hour Organ Recital featuring Wieslaw Rentowski, professor of theory

and composition at Tulane University, New Orleans. A program of contemporary works in conjunction with the Edmonton Composers' Concert Society. Convocation Hall.

8 March, 6 pm

4th Edmonton New Music Festival: Corey Hamm, piano. Program will include works by Ligeti, Dutilleux, Ferguson, Daniel and Rindfleisch. Admission: \$5 or Festival pass. Convocation Hall.

8 March, 8 pm

4th Edmonton New Music Festival: The Clarion Ensemble. Program will include works by Rogala, Jazwinski, Penderecki, Lutoslawski, Grela-Moziejko, Moryto, Synowiec, Kuchta and others. Sponsored by the Canadian Polish Congress. Admission: \$5 or Festival pass. Convocation Hall.

12 March, 8 pm

University Symphony Orchestra Concert with soloist Martin Riseley, violin, playing Sibelius's "Violin Concerto." Malcolm Forsyth, conductor. Program will also include works by Beethoven and Elgar. Admission: \$5/adults, \$3/students/seniors. Convocation Hall.

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TWO BEDROOM - 900-square-foot first floor suite in newly renovated home within walking distance to U of A. Suitable for professional, parking included. No pets, nonsmoker, adults only. \$400/monthly. 433-1479.

GARNEAU CONDO - Immaculate, quiet. Two blocks south of U of A Hospitals. Living/dining with fireplace. Den with bay window, two decks, two bedrooms/bathrooms. European kitchen. Rent includes secured parking, heat, water, ensuite laundry. Call 431-1179.

HOUSE WITH FIVE APPLIANCES, close to University and downtown. \$650/month. Available June 1995. 433-5674.

MILLCREEK - Fully upgraded 77-year-old two storey character home one block from ravine. Two bedrooms plus den, seven appliances, enclosed verandah, double garage. Ten minutes to University/downtown. Available 1 April, \$750/month. Kristine, 468-6050.

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EXECUTIVE LUXURY - Two bedroom condo in The Belgravia at firesale price. Substantially below cost. Reg MacDonald, Re/Max. 439-7000.

LANDSDOWNE - Three new listings! 12515 52 Avenue, 12612 52B Avenue, 5123 Lansdowne Drive. All great locations, eight minutes to University. Liz Crockford, Spencer Realty, 435-0808.

PARKALLEN SEMI-BUNGALOW - \$115,900. Comfortable home, three bedrooms, upgraded bath, large west yard, big garage, plus location. Easy access, transit, University. Great potential. Florence Thompson, Spencer Realty, 435-0808.

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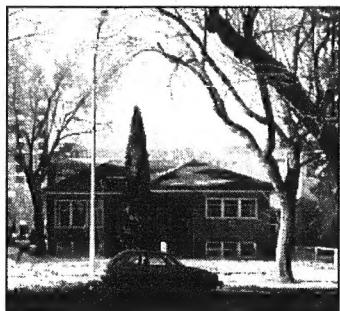
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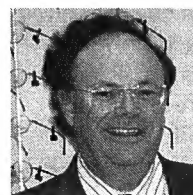
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